

**SYLLABUS**

**FOR**

**POST GRADUATE DIPLOMA IN HARDWARE  
TECHNOLOGY AND APPLICATIONS  
(P.G.D.H.T.A.)**

One Year P.G. Diploma Course

**SAURASHTRA UNIVERSITY  
RAJKOT  
(Effective from June 2013)**



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PGDHT A  
Department of Electronics  
Saurashtra University, Rajkot

**SAURASHTRA UNIVERSITY**  
**DEPARTMENT OF ELECTRONICS**  
**PGDHT&A SYLLABUS**  
**SEMESTER I & II**

**SEMESTER I**

**(24 Credits)**

Paper-1	Electronics for Computer Hardware	<b>(4 Credits)</b>
Paper-2	Computer Hardware - 1	<b>(4 Credits)</b>
Paper-3	Computer Hardware - 2	<b>(4 Credits)</b>
Paper-4	Computer Hardware - 3	<b>(4 Credits)</b>
	<b>Practical's</b>	<b>(8 Credits)</b>

**SEMESTER II**

**(24 Credits)**

Paper-5	Advanced Computer Hardware	<b>(4 Credits)</b>
Paper-6	Advance Hardware and Troubleshooting	<b>(4 Credits)</b>
Paper-7	Data Communications & Computer Network	<b>(4 Credits)</b>
Paper-8	Elective Paper	<b>(4 Credits)</b>
	<b>Practical's/Project</b>	<b>(8 Credits)</b>

Elective Papers:

1. Web Design & Development
2. Server Administration : Windows and Linux
3. Programming with C++
4. Windows 7 Configurations
5. Emerging Technology



# **Post Graduate Diploma in Hardware Technology & Application (PGDHT A)**

## **Detailed Syllabus**

### **SEMESTER- I**



# Paper 1: Electronics for Computer Hardware

Credit: 04

Total Marks: 100 (70 External+30 Internal)

Total Hours requires: 60 Hrs.

## UNIT - 1      PASSIVE & ACTIVE COMPONENTS

Resistors: Types of resistors, color code, parallel and series connections, basic uses.

Capacitors: Type of capacitors, color code, parallel and series connection, basic uses.

Inductor: Concept of a coil - inductance, making of an inductor, basic uses.

Transformer: Concept types and uses.

Semiconductors: Structure of atom, vacancy, conductor, semiconductor insulator. Intrinsic semiconductor, doping,

P and N types of semiconductors.

Diodes: P-N Junction, Zener

Transistor: BJT, FET, MOSFET, working and characteristics.

Integrated circuits:      Basic concepts.

## UNIT - 2      CONCEPTS OF CIRCUITS

Definition of current and voltage, KCL and KVL (Kichoff's current Law and Kirchoff's voltage law), Ohm's Law, R-L, R-C and R-L-C circuits.

## UNIT - 3      BASIC DIGITAL CONCEPTS

Number System - Binary - Octal - Hex

Basic logic gate - AND-OR-NOT-XOR, NOR, NAND

Flip flop: R-S D and JK.

Shift registers, counters encoder and decoder

Few Boolean function and simplifications.

## UNIT - 4      HOW TO USE VARIOUS LABORATORY INSTRUMENTS AND DEVICES

Current meter, voltage meter, Multimeter, Oscilloscope, function generator, soldering iron, PCB, disordering pump.

### Recommended-Books:

1.      Electronics devices and circuits. By: S. Salivahanen, N. Sureshkumar, A. Vallavraj Tata McGrow Hill.
2.      Solide - State devices and circuits By: S.P. Bali, New age international publishers Ltd. Willey Eastern Ltd.
3.      The Basic Electronics By : B. L. Thereja. S.Chand & Co.



## **Paper 2: Computer Hardware - 1**

**Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **UNIT - 1      INTRODUCING HARDWARE**

The visible PC, What is a PC?, Who controls PC software?, Who Controls PC hardware?, White Box systems, Hardware Needs Software to Work, PC Hardware Components, Hardware Used for Input and Output , Hardware Inside the Computer Case , The Motherboard, The Processor and the Chipset, Storage Devices, Motherboard Components Used for Communication Among Devices Expansion Cards ,The Electrical System, Instructions Stored on the Motherboard and Other Boards.

### **UNIT - 2      MOTHERBOARD**

Motherboard Form Factors: obsolete form factors, ATX and other modern form factors  
What is the chipset, Roles of Chipset in motherboard, Traditional North/South Bridge Architecture, Hub Architecture, Features and block diagram of current chipset, Super I/O chip, Motherboard connectors, Motherboard selection criteria (knowing what to look for).

### **UNIT - 3      EXPANSION BUSES**

System Bus Types, Functions and Features, The Processor Bus (FSB), Calculating Processor Bus Speeds

Overview of different I/O Buses: The ISA Bus, The Micro channel Bus, The EISA bus, Local Buses ( VESA, PCI, PCI Express, AGP), Overview of System Resources: Interrupts, DMA channels, I/O port addresses, Resolving Resource Conflicts.

### **UNIT - 4      MEMORY**

Memory Basics: ROM, DRAM, Cache Memory: SRAM

RAM Types and Performance: Fast page Mode DRAM, Extended Data Out RAM (EDO), SDRAM, DDR SDRAM, DDR2 SDRAM, DDR3 SDRAM, RDRAM

Memory modules, SIMMs, DIMMs and RIMMs (Physical Memory),Memory Banks, RAM upgrades, The system Logical Memory Layout.

### **Recommended-Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing PCs” by Scott Mueller Publisher: QUE (Pearson Education) 20th Edition.
3. PC Hardware” by Michael Meyers, Scott Jernigan. TMH Edition
4. Hardware Bible” by W. L. Rosch, Techmedia Publication



## **Paper 3: Computer Hardware - 2**

**Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **UNIT - 1      KEYBOARD AND POINTING DEVICES**

Keyboards, Enhanced 101-key keyboard, 104 key keyboard, Keyboard Technology: key switch design, the keyboard interface, typematic functions, keyboard key numbers and scan codes, international keyboard layouts, keyboard/mouse interface connectors, USB keyboards, keyboards with special features, Keyboard troubleshooting and repair, keyboard disassembly, cleaning a keyboard, keyboard recommendations, Pointing Devices: Ball Type mice, Optical mice, Pointing Device Interface types, Mouse troubleshooting, scroll wheels, trackpoint, alternative pointing devices, Wireless Input Devices, Power Management features of wireless input devices, Troubleshooting Wireless Input Devices.

### **UNIT - 2      MICROPROCESSOR TYPES AND SPECIFICATIONS**

PC components: Introduction

Microprocessor History, PC Processor Evolution, 16-bit to 64-bit Architecture Evolution

Processor Specifications: Data I/O Bus, Address Bus, Internal Registers, Processor Modes

Processor Features: System Management Mode (SMM), Superscalar Execution, MMX Technology, Dynamic Execution, Dual Independent Bus Architecture, Hyper Threading Technology, Multicore Technology

Overview of Processor Socket and slot types, Math Coprocessor, Overview of current processors, Processor cooling and overclocking overview

### **UNIT - 3      BIOS AND CMOS SETUP**

BIOS Basics, Motherboard ROM BIOS: ROM Hardware, ROM shadowing, ROM chip types, ROM BIOS Manufacturers, BIOS Hardware/Software

Upgrading the BIOS: where to get your BIOS update, determine your BIOS version, Checking the BIOS date, Backing Up Your BIOS, Backing Up Your BIOS setup (CMOS RAM) setting, Upgrading a Flash BIOS

CMOS setup specifications, Plug and Play BIOS: PnP device IDs and ACPI.

### **UNIT - 4      POWER SUPPLIES**

Form Factors used by Computer Cases, Motherboards, and Power Supplies, Types of Form Factors , Types of Computer Cases , Measures and Properties of Electricity, AC and DC , Hot, Neutral, and Ground , Some Common Electronic Components , Selecting a Power Supply, Types and Characteristics of Power Supplies , How to Select a Power Supply , Protect Yourself and the Equipment against Electrical Dangers , Protect Yourself against Electrical Shock and Burns, Protect the Equipment Against Static, Electricity or ESD, Protect Against Electromagnetic Interference , Surge Protection and Battery Backup , How to Work Inside a Computer Case,

PC Support Technician Tools , Safety Precautions , Steps to Take Apart a Computer , Steps to Put a Computer Back Together , Troubleshooting the Electrical System, Problems with External Power , Problems with Loose Internal Connections , Problems that Come and Go , Problems with an Inadequate Power Supply ,Problems with a Faulty Power Supply ,Problems



with the Power Supply Fans , Problems with Overheating , Power Problems with the Motherboard , Replacing the Power Supply, Power protection systems: surge suppressors, phone line surge protectors, line conditioners, backup power.

**Recommended-Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing PCs” by Scott Mueller Publisher: QUE (Pearson Education) 20th Edition.
3. Modern all about keyboard and mouse by Manhar Lotia BPB Publication
4. Hardware Bible” by W. L. Rosch, Techmedia Publication



## **Paper 4: Computer Hardware - 3**

**Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **UNIT - 1      VIDEO HARDWARE**

Display Adapters and Monitors, Video Display Adapters , Video Adapter Types, Integrated Video/Motherboard Chipsets, Video Adapter Components, Identifying the Video and System Chipsets, Video RAM, The Digital-to-Analog Converter (DAC) , Video Display Interfaces, The System Interface, The Display Interface, Digital Display Interfaces, TV Display Interfaces, 3D Graphics Accelerators, How 3D Accelerators Work, Application Programming Interfaces, Dual-GPU Scene Rendering, 3D Chipsets, Monitors, Display Specifications, LCD Technology, CRT Display Technology, Plasma Display Technology, LCD and DLP Projectors, Using Multiple Monitors, Dualview, Homogeneous Adapters, Heterogeneous Adapters, Video Capture Devices ,Video Troubleshooting and Maintenance Troubleshooting Video Cards and Drivers Video Drivers , Maintaining Monitors Testing Monitors , Adjusting Monitors Bad Pixels Troubleshooting Monitors Repairing Monitors

### **UNIT - 2      AUDIO HARDWARE**

How sound works in a PC: sound capture basics, recorded sound formats, playing sounds, MIDI, other file formats, video, applications, streaming media  
Getting the right sound card: processor capabilities, speaker support, recording quality, jacks, extra features, audio cables, speakers  
Installing a sound card: Physical installation, installing drivers, installing sound programs, installing applications  
Troubleshooting Sound: Hardware Problems, Configuration Problems, Application Problems, Sound card Benchmarking, Speaker selection criteria, theater and surround sound considerations, microphones.

### **UNIT - 3      OPTICAL STORAGE : CD and DVD**

Optical Technology: Introduction  
CD-Based Optical Technology: CDs A brief History, CD construction and Technology, Mass-Producing CDs, Drive Mechanical Operation, Overview of writable CDs  
DVD: DVD history, DVD construction and Technology, DVD capacity (sides and layers)  
Introduction of Blu-ray disc and HD-DVD, Overview of optical disc file systems  
Optical Drive Performance Specifications: CD data transfer rate, CD drive speed, DVD drive speed, access time, Buffer/Cache, DMA, Interface, Loading Mechanism and other drive features.

### **UNIT - 4      REMOVABLE STORAGE**

The Role of Removable Media Drives: Flash Memory media, Magnetic Disk media, Magnetic Tape media, Flash Memory Devices, Microdrive Technology, High Capacity Magnetic Storage Devices, Floppy Disk Drives, Tap Drives, Magneto Optical Drives.





**Recommended-Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing PCs” by Scott Mueller Publisher: QUE (Pearson Education) 20th Edition.
3. Modern all about floppy disk and drives by Manhar Lotia and Pradeep Nair BPB Publication
4. PC Hardware” by Michael Meyers, Scott Jernigan. TMH Edition



**SET OF 10 PRACTICALS BASED ON PAPER 1, 2, 3 & 4**



# **Post Graduate Diploma in Hardware Technology & Application (PGDHT A)**

## **Detailed Syllabus**

### **SEMESTER- II**



## **Paper 5: Advanced Computer Hardware Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **UNIT - 1      MAGNETIC STORAGE PRINCIPLE**

Magnetic storage, History of Magnetic storage, How Magnetic Field are used to store data  
Read/Write Head Designs: Ferrite, Metal-in-Gap, Thin Film, Magneto-Resistive Heads, Giant-Magneto Resistive Heads

Data Encoding Schemes: FM encoding, MFM encoding, RLL encoding, Encoding scheme comparisons, Partial-Response, Maximum-Likelihood Decoders, Areal Density

### **UNIT – 2      HARD DISK STORAGE**

Hard Disk Storage: Definition of a Hard Disk, Hard Drive Advancement, Form Factors overview

Hard Disk Drive Operation: The ultimate HDD analogy, Tracks and Sectors, Disk Formatting  
Overview of Basic Hard Disk Drive Components: Hard Disk Platters, Recording Media, R/W Heads, Head Actuator Mechanisms, Air Filters, Spindle Motors, Logic Boards, Cables and connectors, Configuration Items.

### **UNIT – 3      PRINTERS AND PRINTING TECHNOLOGY**

Printer types and features, types of printers, printer features, installing and sharing printers, how to install a printer using Windows, Steps to install a network printer, manage printer features and settings, share an installed printer, supporting printer, printer languages, using windows to manage printers, printer consumables, maintaining printer, printer maintenance kits, upgrade the printer memory or hard drive, cleaning a printer, online support for printers, updating printer firmware, Troubleshooting Printers: printer does not print, problems with laser printer, inkjet printer and impact printers

### **UNIT – 4      SCSI**

SCSI Chains: SCSI IDs, Termination

SCSI Flavors, SCSI-1, SCSI-2, SE, HVD, and LVD SCSI, SCSI-3, Last Notes on Termination, Bus Mastering, SCSI Cables and Connectors, SCSI Performance

Troubleshooting SCSI: Power and Connectivity, Boot Firmware, Memory Chips, Storage, I/O, Device Drivers

Costs and Benefits of SCSI: SCSI vs. IDE, Serial-Attached SCSI

### **Recommended-Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing PCs” by Scott Mueller Publisher: QUE (Pearson Education) 20th Edition.
3. Modern all about floppy disk and drives by Manhar Lotia and Pradeep Nair BPB Publication
4. PC Hardware” by Michael Meyers, Scott Jernigan. TMH Edition



## **Paper 6: Advance Hardware and Troubleshooting Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **UNIT - 1 INTERNET CONNECTIVITY**

Internet connection trinds, Broadband Internett Access types, cable TV (CATV), Digital Subscriber Line (DSL), Wireless Broadband, Satellite Broadband, Integrated Services Digital Network (ISDN), Leased Lines, Comparing High Speed Internet Access, Dialup Modems, Modem standards and protocols, bits and baud rates, modulation standards, Error correction protocols, Data compression standards, 56Kbps Modems, Internet connection security, Sharing your internet connection, routers for internet sharing, Modem/router status LEDs.

(Book: Upgrading and Repairing PCs by Scott Mueller)

### **UNIT – 2 INSTALLING AND SUPPORTING I/O DEVICES**

Basic principles to support I/O Devices, Types and Features of I/O Devices, I/O ports on the motherboard, display devices, expansion cards, Installing Input Devices: How to Install a Keyboard and Mouse, How to Install a Touch Screen, How to Install a Barcode Reader, How to Install a Fingerprint Reader, How to Install a KVM Switch, Installing and Configuring I/O Devices and Ports: using device manager, using ports on the motherboard, Installing and configuring adapter cards, Troubleshooting I/O Devices: Troubleshooting motherboard i/o ports, troubleshooting keyboards, troubleshooting monitors and video cards, troubleshooting other adapter cards (CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting)

### **UNIT – 3 Building/Upgrading systems**

System components: Case and Power supply, Processor, Motherboard, Memory, HDD, Removable storage, Input Devices, Video card and display, audio hardware, accessories

Hardware and Software resources, System assembly and disassembly

Motherboard Installation: Installing CPU and Heat Sink, Installing Memory modules, mounting motherboard in the case, connecting the power supply, connecting I/O and other cables to the motherboard, Installing the drivers, Installing a video card, Installing additional expansion cards, replacing the cover and connecting external cables, System startup, Installing the operating system, Troubleshooting Installation.

(Book: Upgrading and Repairing PCs by Scott Mueller)

### **UNIT – 4 PC Diagnostics, Testing, and Maintenance**

PC Diagnostics, Diagnostics Software: The Power-on Self Test, Peripheral Diagnostics, Operating system diagnostics, Commercial diagnostics software, Free/User supported diagnostics

The Boot Process: The Hardware boot process (operating system independent), The DOS boot process, The Windows 9x/Me Boot process, Windows 2000/XP startup, Windows Vista/7 startup

PC Maintenance Tools: Hand tools, safety, test equipment, special tools

Preventive Maintenance: Active preventive maintenance procedures, Passive preventive maintenance procedures, Troubleshooting Tips and Techniques.

(Book: Upgrading and Repairing PCs by Scott Mueller)



**Recommended-Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing PCs” by Scott Mueller Publisher: QUE (Pearson Education) 20th Edition.
3. Modern all about floppy disk and drives by Manhar Lotia and Pradeep Nair BPB Publication
4. PC Hardware” by Michael Meyers, Scott Jernigan. TMH Edition



**Paper 7: Data Communications & Computer Network Credit: 04**  
**Total Marks: 100 (70 External+30 Internal)**  
**Total Hours requires: 60 Hrs.**

**UNIT I:**

Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, Layers in the OSI Model, TCP/IP Protocol Suite, Addressing, Physical Layer and Media, Data and Signals, Analog and Digital, Periodic Analog Signals, Digital Signals, Transmission impairment, Data Rate Limits, Performance, Digital Transmission, Digital-to-Digital Conversion, Analog-to-Digital Conversion, Analog Transmission, Digital-to-analog Conversion, Analog-to-analog Conversion

Bandwidth utilization: Multiplexing and Spreading, Multiplexing, Spread Spectrum, Transmission Media, Guided Media, Unguided Media: Wireless, Switching, Telephone Networks, Dial-up Modems, Digital Subscriber Line, Cable TV Networks, Cable TV for Data Transfer

**UNIT II:**

Error Detection and Correction, Introduction, Block Coding, Linear Block Codes, Cyclic Codes, Checksum, Data Link Control, Framing, Flow and Error Control, Protocols, Noiseless Channels, HDLC, Point-to-Point Protocol, Multiple Access, Random Access, Aloha, Controlled Access, Channelization, IEEE Standards, Standard Ethernet, Changes in the Standard, Fast Ethernet, Gigabit Ethernet, IEEE 802.11 Wireless , Bluetooth

**UNIT III:**

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Network Layer: Internet Protocol, Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6, Network Layer: Address Mapping, Error Reporting and Multicasting, Address Mapping, ICMP, IGMP, ICMPv6, Network Layer: Delivery, Forwarding and Routing, Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing Protocols

**UNIT IV:**

Application Layer: Domain Name System, Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS Messages, Types of Records, Registrars, Electronic Mail and File Transfer, Remote Logging, Telnet, Electronic Mail, File Transfer

WWW and HTTP: Architecture, Web Documents, HTTP, Network Management: SNMP, Network Management System, Simple Network Management Protocol (SNMP), Multimedia, Digitizing Audio and Video, Audio and Video Compression, Streaming Stored Audio/Video, Streaming Live Audio/Video, Real-Time Interactive Audio/Video, RTP, RTCP, Voice over IP



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1. **REFERENCE BOOKS: Introduction to Data communications and Networking ,W.Tomas I , Pearson education.**
  2. **Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan, TM**
  3. **Computer Networks,A.S.Tanenbaum,4thedition,Pearson education.**
  4. **Data and Computer Communications,G.S.Hura and M.Singhal,CRCPress,Taylor and Francis Group.**
  5. **An Engineering Approach to Computer Networks-S.Keshav,2ndEdition,Pearson Education.**
  6. **Understanding communications and Networks,3rd Edition, W.A.Shay,Cengage**





## **Paper 8: Elective Paper (Optional) Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **Web Design and Development**

#### **Unit I: Designing With HTML**

Designing & Planning Web Pages ,Website Evaluation and Rubric Creation

Creating HTML Documents

Basic XHTML Markup,HTML Basics, Headings, Paragraphs, Formatting Text,HTML Elements, HTML Attributes, Style and Color,XHTML Lists, Creating Links, Creating a Data Table

HTML Basics , HTML Headings Sizes, Paragraph Styles & Line Breaks, Adding Links & Images, Center and DIV Tags, Creating Clean Code, Creating Lists, Using Fonts & Color in Text, Using Anchors in Text, Hexadecimal, Most Common HTML Mistakes, More on Graphics, Tables, Borders & Cells, Adding Audio, Working With Frames, Adding Forms,

#### **Unit II: Creating Style Sheets with CSS**

Introduction to Cascading Style Sheets, Page Layout Techniques,Beginning CSS Selectors, Properties and Values, Selectors for Text Styles, Images and Colors, Fonts and Sizes, Links, Hovers, Anchors, Lists, Margins, Padding, Borders.

#### **Unit III: Javascript Introduction**

What is JavaScript?,PreRequirements,Creating a JavaScript file,Tools Required  
Basics of Javascript,Structure of a JavaScript Code,DataTypes, Variables & Operators  
Looping & Conditional Statements,Functions,Types & Objects,Arrays,Numbers  
Strings,Dates,Objects

DOM (Document object model)

What is DOM? ,Element Nodes,Getting Element Nodes,Changing DOM Content,Creating DOM Elements,Events Overview,Responding to Mouse Events,Form Events,Timers

#### **Unit IV: PHP Programming**

Introduction PHP and MySQL, Benefits of using PHP MySQL,Setup of PHP Environment,Testing the Page,Troubleshooting Installation Errors,PHP Programming Concepts,Write your First PHP Program  
Coding with PHP

Embed PHP in HTML / HTML in PHP,PHP Data Types,Variables in PHP,SuperGlobal Variables,Operators in PHP,Conditional Statements,Loops (For, While, Do While, Foreach)  
PHP Functions,Using Functions in PHP,Userdefined Functions,Predefined Functions  
Common Functions,String Functions,File Functions,Date Functions,Hash Functions,Mail Function

MySQL Database Training

What is Database ?,Understanding an RDBMS,Understanding Tables, Records, and Fields  
SQL Language,Using the MySQL Command-Line Client,Working with MySQL Admin  
Working with PHP MyAdmin,Creating Databases,Types of Databases,



Creating Tables in Database, Specifying Field Data Types,Selecting a Table Type Altering Tables,Altering Table and field Names,Altering Field Properties,Adding and Removing Fields and Keys,Altering Table Types

Backing Up and Restoring Databases and Tables

SQL Queries :Inserting Records,Editing and Deleting Records,Performing Queries,Retrieving Specific Columns,Filtering Records with a WHERE Clause,Using Operators,Sorting Records and Eliminating Duplicates,Limiting Results,Using Built-In Functions ,Grouping Records,Joining Tables,Using Sub queries,Using Table and Column Aliases

Reference Books :

1. HTML 5 and CSS 3 made simple by Bayross , BPB Publications
2. Web Enabled Commercial Application Development Using Html, Dhtml,javascript, DHTML and PHP by Bayross , BPB Publications
3. Beginning PHP, Apache, MySQL Web Development,Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner,WROX Publication
4. W3Schools.com



**Paper 8: Elective Paper (Optional) Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

**Server Administration : Windows and Linux**

UNIT I

Installing, Upgrading and Deploying Windows Server 2008, Configuring Network Connectivity, Active Directory and Group Policy, Application Servers and Services

UNIT II

Terminal Services and Application and Server Virtualization, File and Print Servers, Windows Server 2008 Management, Monitoring and Delegation, Remote Access and Network Access Protection, Backup and Recovery

UNIT III

Installing, Upgrading and Deploying Linux Server, Enhance User Security , Bash Scripting and Tools, Basics of File Security , Software Management , Network Monitoring.

UNIT IV

Routing Network traffic, NAT, Configuration of SMTP, DNS, Web Server, FTP and NFS

Reference Books :

1. Linux Server Step-by-Step Configuration Guide, Don r Crowley
2. Windows Server 2008 Unleashed ,Rand Morimoto , Michael Noel



## **Paper 8: Elective Paper (Optional) Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **Programming with C++**

#### **UNIT - I**

1. Introduction to C++  
Starting with C++  
How C++ evolved from C?  
Features of C++  
Procedure-oriented programming  
OOP vs. procedure-oriented programming  
The basic anatomy of a C++ program  
Starting with a simple “Hello World” program  
Compiling, linking and running a C++ program
2. Object-Oriented Programming Concepts  
Abstraction  
Inheritance  
Polymorphism  
Data Binding  
Encapsulation  
Classes, subclasses and Objects

#### **UNIT II**

- 1 The Basics of C++  
Base Data Types and sizes  
User-defined Data Types  
Variable Declarations, Variable Names  
Dynamic initialization of variables  
Constants and its types  
Character Constants  
String Constants  
Standard input and standard output  
Formatted input – cin  
Formatted output – cout  
Use of << and >> operators
2. Working with Operators and Expressions  
Operators  
Arithmetic Operators  
Relational Operators  
Assignment Operator  
Logical Operators  
Increment and Decrement Operators (++ and --)  
'Operate-Assign' Operators (+=, \*=, ...)  
Expressions  
What are Expressions?  
Operator Precedence



Precedence and Order of Evaluation

Conditional Expression

Casting and type conversion

3. Controlling the Program Flow

Decision control

if

if – else

if - else if

Loop Control

while

do – while

for

break

continue

Case Control

switch

goto

### **UNIT III**

1. Using Functions/Procedures

Why Functions?

Anatomy of a Function

Returning values from functions

Arguments Passed by Value

Passing Addresses of Arguments

Concept of variable scope and scope rules

Static and automatic variables

Global variables

2. Pointers and Arrays

Pointers

What is a Pointer?

Pointer Initialization

Pointer Operators

The & Operator

Pointer Arithmetic

Functions and pointers

Understanding Arrays

Arrays

Initializing Arrays

Passing Arrays to Functions

Pointers and Arrays

Pointer to an Array

Array of pointers

Strings

String I/O

cin and cout member functions

Standard C String functions

Arrays of Strings



## UNIT IV

### 1. Binding data and functions

Concept of a class

Defining a class

Creating an object

Object Scope

Data Abstraction

Enforcing Data Encapsulation

'this' Pointer

Dynamic creation of objects

Constructors and Destructors

The Default Constructor

The Destructor

Parameterized Constructors

Copy constructor

Defining member functions

Methods and access modifiers

Accessing class data and methods

Friend class and friendly functions

Returning objects

Arrays of Objects

### 2. Function and Operator Overloading

Function Overloading

Using overloaded functions

Rules for overloading

Operator overloading and its uses

Overloading unary and binary operators

Overloading the assignment operator

Overloading the << Operator

Overloading the increment and decrement operator

Dealing with strings using operators

Converting data types

Basic to class type

Class to basic type

Class to another class type

### Reference Books :

Let us C, Yashawant P Kanetkar, BPB, NewDelhi

Let us C++, Yashawant P Kanetkar, BPB, NewDelhi

Object Oriented Programming with C++, E. Balaguruswamy, Tata McGrawHill

Waite Group's Object Oriented Programming in C++, Robert Lafore, Galgotia



## **Paper 8: Elective Paper (Optional) Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **Windows 7 Configurations**

#### **UNIT 1 INTRODUCTION OF WINDOWS 7**

What's New in Windows 7, Installing and Configuring Windows 7, Obtaining Help and Support, Personalizing Windows 7, Adding, Removing and Managing Programs, Using Internet Explorer, Internet Explorer Compatibility, Security and privacy

#### **UNIT 2 FILE MANAGEMENT**

Overview of organizing files and information, using windows search, overview of advanced file management, backup, restore and recovery

#### **UNIT 3 TUNING, TWEAKING AND TROUBLESHOOTING**

Tuning Up and Monitoring performance, performing routine maintenance, using advanced system management tools, deployment and migration, automating windows 7, troubleshooting windows errors and crashes

#### **UNIT 4 WINDOWS 7 AND PC HARDWARE**

Setting up and configuring hardware, managing disks and drives, using pen, touch and voice input

#### **Recommended Books:**

1. Windows 7 Inside Out by Carl Siechert, Ed Bott, Craig Stinson
2. Troubleshooting Windows® 7 Inside Out: The ultimate, in-depth troubleshooting reference (Inside Out (Microsoft)) by Mike Halsey
3. MCTS Microsoft Windows 7 Configuration Study Guide, Study Guide: Exam 70-680 by Don poulton
4. MCTS Microsoft Windows 7 Configuration Study Guide, Study Guide: Exam 70-680 by William Panel
5. MCTS Microsoft Windows 7 Configuration Study Guide, Study Guide: Exam 70-680 Ian McLean and Orin Thomas
6. Exam 70-680: Windows 7 Configuration with Lab Manual Set (Microsoft Official Academic Course Series) by Microsoft Official Academic Course



## **Paper 8: Elective Paper (Optional) Credit: 04**

**Total Marks: 100 (70 External+30 Internal)**

**Total Hours requires: 60 Hrs.**

### **Emerging Technology**

#### **UNIT 1      PORTABLE PCS**

Portable Computing Devices: Desktop Replacements, Desktop Extenders, PDAs  
Enhance and Upgrade the Portable PC: PC Cards, Limited-Function Ports, General-Purpose Ports, The Modular Laptop  
Managing and Maintaining Portables: Batteries, Power Management, Cleaning, Heat, Centrino Technology, Express Card

#### **UNIT 2      NOTEBOOKS**

Special considerations when supporting notebooks, warranty concerns, service manuals and other sources of information, diagnostic tools provided by manufacturers, the OEM operating system build, caring for notebooks, supporting notebook peripheral devices, port replicators and docking stations, PC card, CardBus, and expresscard slots, using Bluetooth, cellular, and wifi connections, power and electrical devices, power management, Input devices, video, troubleshooting, replacing and upgrading internal parts, upgrading memory, replacing a hard drive, disassembling and reassembling a notebook computer

#### **UNIT 3      TABLET PCs**

The world of tablet pc, redefining the pc experience, connecting to your office and beyond, discovering pen basics, when your keyboard..isn't, talking to your tablet pc, thinking ink with journal, stuck on sticky notes, kicking back with ebooks and inkball, creating presentations just got easier, communicating with tablet PC, ten neat thing you can do with your tablet pc, top ten applications for your tablet pc, ten real-world uses of your tablet pc, overview of android and windows os and applications for tablet pcs

#### **UNIT 4      LAPTOPS**

Laptop system maintenance and assembly, processors, motherboards, memory, power, expansion buses, pcmcia, hard disk storage, removable storage, graphics and sound, communication, laptop keyboards and pointing devices, portable system accessories, software/os system, problem solving and troubleshooting, repairing,

Overview of Smart Mobiles and devices

#### **Recommended Books:**

1. CompTIA A+ Guide to Hardware Managing, Maintaining and Troubleshooting 5<sup>th</sup> Edition by Jeans Andrews.
2. Upgrading and Repairing Laptops” by Scott Mueller Publisher: QUE
3. Tablet PCs by Dummies
4. PC Hardware” by Michael Meyers, Scott Jernigan. TMH Edition





**SET OF 10 PRACTICALS BASED ON PAPER 5, 6, 7 & 8**

